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Journal of the Society of Arts.

FRIDAY, OCTOBER 2, 1863.

COUNCIL.

The following Institutions have been received into Union since the last announcement:—

Edinburgh, Philosophical Institution.
Northampton, Mechanics' Institution.
Southampton, Hartley Institution.
Witney, Natural History and Literary Society.

ART WORKMANSHIP PRIZES.

The Council beg to announce that seventy-two works, embracing nearly all the heads under which Prizes were offered, have been sent in for competition, but they have found it necessary to defer dealing with them for the present. The reasons are stated in the following circular, which has been forwarded to each competitor:—

Society for the Encouragement of Arts, Manufactures, and Commerce,
John-street, Adelphi, London, W.C., 1st October, 1863.

Dear Sir,—I am directed by the Council of this Society to inform you that they have found it necessary to defer, for the present, holding an exhibition of the works sent in to compete for the Art-Workmanship Prizes offered by the Society, as the very extensive repairs now going on in the Society's House render it impossible that the articles could be displayed in a suitable manner, and also because a large number of those who would be specially interested in seeing such works are absent from London at this season.

The Council regret this unavoidable delay, but they feel they would not be doing justice to those who have sent their works for competition, if they were to attempt an exhibition of them under these unfavourable circumstances. Whenever such an exhibition is in contemplation, due notice shall be sent to you.

I am, dear Sir, yours faithfully,
P. LE NEVE FOSTER, Secretary.

EMIGRATION TO NATAL.

By the Cape mail just arrived, letters and official reports have been received which indicate that satisfactory progress is making in the Colony of Natal.

The following are extracts from the Report of a Select Committee "to consider and report upon the best means of securing to this colony a larger immigration of agricultural and other settlers than the present system is adapted to create:"—

It appears that during the term ending 31st December, 1862, the white population of this colony increased from 7,829 to 13,990, being an addition of 6,361 during that period; 64,540 acres of land were also brought under cultivation, making an aggregate of about 70,000 acres in 1862, against 3,315 in 1853; the returns of stock of different kinds are also, for the same years respectively, 188,300 head against 307,647 head.

From these figures it is evident that the advance in production has been much greater in proportion than the advance in population, but the result has not been to render provisions cheaper; nor, however creditable to the European colonists—as a remarkable proof of their industry and enterprise—it may be, does it seem to the Committee a ratio of progress which ought to be accepted as sufficient to realise those expectations of future productiveness and prosperity which are based upon the proved and varied capabilities of our soil.

The Committee has compared statistics of the numerical, industrial, and commercial progress made by the principal British dependencies during the last ten years, and find conclusive evidence that other colonies, with perhaps fewer natural advantages, have attained a much higher degree of advancement than ours.

Since the cessation of the system known as "Byrne's Scheme," there has only been one system of immigration associated with this colony. This was the plan of assisted passages introduced about five years ago under the auspices of the Immigration Board, and continued up to the present time. Under this arrangement 1,291 individuals were brought into the colony, 978 of whom were proposed, and the proportion of their passage-money guaranteed, by friends here. The entire cost of conveying and landing these may be approximately stated at £20,731, of which £12,910 has been, or is to be, refunded, leaving a net outlay to be borne by the colony of £7,821. It appears, therefore, that the revenue has actually been taxed, on account of white immigration, to the extent of about £1,564 for each year during which the present system has been carried on.

As being directly connected with the subject of agricultural development, the question of Coolie immigration requires the incidental notice of the Committee. During the past five years 1,431 of these people have been landed and allotted here, at a gross outlay of £22,895. When, however, the whole of the guaranteed repayments are made, the actual cost to the colony of this most useful and reproductive movement will not have exceeded £7,000.

The Committee believe that while the present system of European immigration has worked satisfactorily in so far as its limited scope allows, it is insufficient to meet the requirements of the colony, and, unless very materially extended and improved, is not calculated to bring to this colony the number or the classes of population which are needed.

The persons who, under the present arrangements, are principally introduced, are those for whom provision already exists; whose arrival does not tend to meet the general necessities of the colony, and whose numbers must, to a great extent, be circumscribed.

When the results attained in other colonies by a more liberal expenditure and a more comprehensive policy than what are found here are compared with those realised in this colony, it becomes obvious that an enlarged system could, and ought to be, established here. The Committee find that during a period of seventeen years the Australian Colonies expended an aggregate sum of £2,726,541 in the introduction of 209,594 immigrants from Great Britain, being an average annual charge on the revenue of £160,384; while other colonies, in much less intervals, have increased their populations three, four, and five fold. In Natal, during ten years, the number of the whites has not been doubled, although no country can plead a more urgent necessity for a larger civilised population, nor can hold out a greater variety of geographical inducements.

The Committee would now refer to those classes of settlers that are more especially required here.

Passing by the question of labour supply for the coast districts, as not being directly within the range of the Committee's action, allusion may be incidentally made to the expediency of attempting to secure for Natal the labour derived elsewhere—from the North American States, in the shape of free negroes, and from the allocation of the negroes rescued in captured slavers. The only way of obtaining the last, would be, the committee understand, by the establishment of a prize court at this port.

Labourers.—The Committee believe that, were proper arrangements for receiving applications established, it would be found that a very general demand for white farm labour exists. There is reason to anticipate that a certain number of European shepherds will be required in the upland districts, and it is recommended that every magistrate be authorised to receive verbal or written applications for this class of labourers.

Mechanics.—Although it is obvious that the demand for labour of this description must be limited for a population of 15,000 whites, still, at this moment, there is a considerable demand for this kind of labour, and a demand large in proportion to the population; and that good wages will readily be obtained by good rough mechanics and handy men, for whom there is a far greater need in a country where buildings are so few and lodging is so dear, than in other and more populous countries, where employment is necessarily very much less than the supply.

It should be the business of an officer to collect reliable information as to local requirements for these and other classes—to receive applications from employers, and to keep the English agency regularly informed upon these matters.

As regards the general labour needs of the colony, it must not be forgotten that unless a sufficiency of artizan labour prevails here, an inadequate guarantee for the secure investment of capital is offered, the projects of enterprise are liable to be retarded, and the operations of incoming planters and agriculturists are discountenanced rather than encouraged. The Committee are aware that occasionally the want of employment for white workmen is urged by individuals—but they believe this want is, in most cases, more apparent than real—is generally owing to some exceptional cause, and that really efficient and sober mechanics, with moderate expectations, find little, if any, difficulty in obtaining occupation.

The immigrants which are most needed in this colony, as in most other new settlements, are those who devote themselves to the cultivation of the soil, or to the rearing of stock, and who are possessed, in a greater or less degree, of means. It is to those we must look for the development of those natural resources which are so abundantly possessed, but which, to a large extent, lie idle. There are various ways in which the Government can encourage the settlement and assist the efforts of this class.

1st.—By means of assisted passages.

2nd.—By the offer of land on advantageous terms.

3rd.—By facilitating the supply of labour.

4th.—By keeping open good lines of communication.

The first of these modes of assistance involves the expenditure of revenue, and before it could be held out in any special degree, a much larger amount will have to be annually devoted to immigration than has hitherto been granted. In the Australian colonies, from ten to thirty per cent. of the entire revenue is applied to this subject and to correlative purposes. In Natal the actual charge on the revenue for white immigration, during the past five years, has amounted to an average of five per cent., and at present barely amounts to three per cent.; the committee submits that this amount is out of proportion to the necessities of the colony in so important a respect.

It being now an admitted principle that in colonies requiring immigration, the revenue derived from land should be applied to that object, it is clear that the second mode of assistance bears directly upon the first.

The Committee regret that the extent of crown lands yet remaining unallotted, viz., 3,735,920 acres, are so situated, and of such a nature that any large revenue cannot be immediately anticipated from this legitimate source for appropriation to immigration purposes. They would, however, lay stress upon the importance of facilitating the occupation of these waste lands with a view to agriculture or stock-farming, and would recommend the adoption of any satisfactory proposal by which the crown lands would become available, either as a source of revenue or a means of production.

When it is remembered that other colonies are ably represented in the United Kingdom by resident agents having local experience, it is obvious that in course of time, as the tide of immigration increases, such an office will be required for this colony. Natal, at present, is solely dependent upon the action of the Land and Emigration Commissioners, who, though useful so far as they possibly can be, are, nevertheless, not possessed of that practical acquaintance with the peculiar circumstances and needs of the colony, and cannot feel that direct interest in its progress and welfare which can only result from long residence.

The subject of assisted juvenile immigration is well worthy of favourable consideration. The committee find, by the memorial of Mr. R. Clarence, that a charitable institution in London, of which Lord Shaftesbury is chairman, is anxious to send out a limited number of boys of good character, and possessing an elementary knowledge of some useful calling,—that three have already been sent, and have not only given satisfaction to their employers, but have written back expressing gratitude for what had been done for them; but that the association, although deeply desirous to see these boys settled in Natal, cannot afford to pay the cost of their passage out. As these boys are likely to make good and industrious colonists, and as the committee believe that the sooner in life an individual becomes accustomed to colonial circumstances, the better chance of success will he have, and the more useful member of society will he make, it is highly desirable that this proposal should be entertained. The committee must, at the same time, decidedly dissent from any proposition to send out boys from reformatory schools, or any class of immigrants of questionable character.

Another class of immigrants for whom employment, within certain limits, might be immediately obtained, is that of female servants, for whom a need confessedly exists. The committee are of opinion that many European families would be only too glad and grateful to guard their households from the contaminating influences too generally exerted by native nurses and servants, were English domestics obtainable. At present the supply of the latter is very insignificant and unsatisfactory, inasmuch as lengthened engagements are seldom practicable.

Were there an efficient organisation in London, through which arrangements might be made for the selection of applicants likely to give satisfaction, there can be no doubt that the expense of sending out a considerable number of English domestic servants would be guaranteed by employers here. With this view, the Immigration Board might be requested to communicate with philanthropic associations at home, so as to secure female servants of good character on the most advantageous terms.

Another subject of great practical importance is the reception of immigrants when they land, and their immediate accommodation. The committee are keenly sensible of the lasting influence left on the mind of a new arrival by first impressions, and they regard it as a matter of high consequence to encourage and aid, so far as may be, the immigrant at the commencement of his new career. They deem it a very useful and appropriate function of government to alleviate, wherever it is possible, the hardships incidental to all first colonial experiences; and they believe the erection of a suitable building, in which the poorer class of immigrants could obtain immediate lodging for a certain period after landing, would enable the immigrant to economise his resources, and would prevent undue disappointment at the time when it is most calculated to have an injurious effect.

The Committee has not overlooked the question of immigration from the operative classes of Lancashire. They admit that occupation might probably be found here for a certain number of our destitute fellow-countrymen, and they are aware that by other colonies large sums have been voted for the purpose of affording free passages to distressed operatives. The revenue of this colony will not admit an expenditure sufficient for an appreciable immigration, and the Committee are not prepared to recommend any special appropriation for this object.

It is probable, however, that private individuals might feel disposed to guarantee the passage money of a limited number, and the present arrangements might be temporarily applied in furtherance of this object.

The Committee feel that while increased agricultural development is the great end to be obtained by every system of immigration, yet that the promotion of that end necessarily involves the encouragement of those other kinds of immigration to which reference has been made. While the evils which flow from a promiscuous, ill-regulated, and excessive rush of population, are clear and undoubted, and while every well-wisher of the colony will desire that it shall not be subjected to such evils, it is also equally clear that the colony requires, and could advantageously absorb, larger and more rapid accessions of agricultural and labouring settlers than it now receives. Unfortunately, two leading difficulties, to be encountered by every attempt to introduce a new system, are, the inadequacy both of revenue and of land; and these are almost insuperable obstacles in the way of any comprehensive proposal. It is only by a wise liberality in the expenditure of the one, and by a judicious discretion in the disposal of the other, that immigration can be materially assisted, and somewhat similar inducements held out in connection with Natal that are offered to intending settlers by other colonies.

The following resolutions have been moved and carried in the Legislative Council:—

1st. "That, in the opinion of the Council, the circumstances of the Colony require that a larger European immigration than exists at present should be actively promoted, but that the inducements offered, and assistance rendered, to immigration under present arrangements are not sufficient to meet the requirements of the Colony, and should be materially modified and extended."

2nd. "That, in the present position of the Colony, only three modes of immediately promoting an increased immigration present themselves, viz.,—a larger appropriation from the general revenue; a loan raised for the purpose; and the appropriation to this object of Crown Lands; and that, as the proposal of the Natal Land and Colonisation Company offers a desirable means of increasing the European population, by a well-regulated influx of suitable settlers, without other charge upon the colony than the alienation of a comparatively small portion of Crown Lands, and that, too, on highly advantageous terms, as set forth in the appendix to the Report of the Committee on European Immigration, this House is of opinion that negotiations should be re-opened with the Company on the modified basis recommended by the Immigration Board, and by the Select Committee."

3rd. "That a copy of the report of the Select Committee upon European immigration, with its appendix, together with a copy of these resolutions, be transmitted, by respectful address, to the Lieutenant-Governor, praying his Excellency that he forward the same to the Secretary of State for his information; that the recommendations with which the report concludes be acted on; and especially that action be immediately taken upon the following recommendations, viz.:—

"That at least fifty ordinary mechanics be brought out, if need be, at the expense of Government; and that the Natal Land and Colonisation Company be requested to undertake the procuring and selection of these on behalf of the Colony.

"That communication be opened with the Female Emigrant Association, or with the Colonial Emigration Society, with the view of introducing, under special arrangements, a certain number of female servants of good character.

"That a sum of £5,000 be placed upon a Supplemental Estimate for the years 1863-4, in addition to the amounts already voted, with the view of carrying out these and the other recommendations of the report."

OPENING OF THE NEW NATIONAL ART TRAINING SCHOOL AT SOUTH KENSINGTON.

The new buildings which will come into use on the 5th of October, are the first permanent buildings which have been provided for the National Art Training Schools. The buildings heretofore occupied by the Art Classes have all been of a temporary kind. In the first instance, in 1837, when the School of Design was instituted, the classes were held in rooms, on a second floor in Somerset House, once occupied by the Royal Academy; and now by the office for the registration of births, marriages, and deaths. Next the classes met in 1852 in Marlborough House, where the Queen, at the intervention of H.R.H. the Prince Consort, graciously permitted a training school for teachers for the Schools of Art throughout the country to be first established. Then in wooden buildings at South Kensington, to which place the training schools were removed in 1856.

The present buildings are plain brick, but of a substantial, fireproof character, and provide for all the special requirements of an Art School which the experience of a quarter of a century has shown to be necessary, in respect of lighting by day and night, as well as ventilation, heating, etc. A distinct series of rooms has been provided for male and female classes; those for males being on the second, and those for females on the first, story. In each series, separate rooms are assigned for drawing, painting, and modelling, &c., and there is a lecture-room in common for the male and female classes. The entrances to the respective classes are in the Exhibition-road. This series of buildings forms the north and west sides of the inner quadrangle of buildings, the plan of which was approved by the Select Committee of the House of Commons in 1860.

BRITISH ASSOCIATION, NEWCASTLE-UPON-TYNE, 1863.

On the Paper Manufactures of Northumberland and Durham. By W. H. Richardson.

In consequence of the general disinclination on the part of the paper manufacturers to furnish any information or statistics of their operations, this account will necessarily be imperfect.

The estimates given have, however, been carefully considered, and are as accurate as possible under the circumstances.

Number of firms in the trade	12
Number of machines making white paper...	10
" " " brown " ...	9
	Tons.
Quantity of white paper made per year ...	3,500
" brown " " " ...	4,500
Total	8,000

Being about one-twelfth of the entire production of the United Kingdom.

Total estimated annual value, £300,000.

	Tons.
Coarse material, as old ropes, &c., used for brown paper	5,200
Rags	4,000
Esparto grass	2,000
Bleaching powder	400
Soda ash	200
Coals	35,000

The imports of Esparto grass to the port of Newcastle-on-Tyne were:—

1860	1,224 tons.
1861	2,613 "
1862	9,534 "

The principal improvements that have been made in the manufacture of paper, in late years, are in the details and general efficiency of machinery, whereby a much larger quantity of paper is made with the same apparatus than formerly; and in the superior management of the chemical processes, whereby material that formerly was entirely useless is now worked up into common shop papers, and inferior rags are cleansed and bleached into a good white paper, which formerly were made into coarse paper.

The only notable exception to this is the introduction of Esparto grass, the importation of which has been steadily increasing, and, as will be seen by the statistics already given, amounted to nearly 10,000 tons in the year 1862, into the port of Newcastle alone, the greater part of which was, however, forwarded by railway into Scotland, Lancashire, and elsewhere. Newcastle affords special and peculiar facilities for the importation of this material from the east coast of Spain, where it is principally gathered. Vessels load at Newcastle with coke or coals for Spain, and bring return cargoes of manganese, pyrites, copper ore, lead and lead ore, iron ore, and other minerals for the use of the chemical and other manufactures on the Tyne, and from the lightness of the Esparto grass, one ton of which occupies the space of three to four and a half tons measurement, they are enabled to carry a full cargo of it in addition to the minerals, which serve as ballast, thus materially economising the cost of freight; so much so, that paper manufacturers near Edinburgh and in Lancashire find it cheaper to import *viâ* Newcastle, than by way of Leith or Liverpool.

Esparto, or Alfa as it is called on the African Coast, is a coarse grass, which grows in sandy places in almost all the countries bordering on the Mediterranean. This grass consists mainly of *Ligeum Spartium*, *Stipa tenacissima*, and other species of the last named genus, all very similar in character and general appearance.

It has been used from time immemorial for making mats, ropes, &c., and is mentioned in Pliny's Natural History as applied to these purposes. Various attempts have been made to manufacture Esparto into paper during the last 30 years, one patent for the purpose being dated as far back as 1839, and in France similar efforts have been made for many years. None of these, however, have been practically successful on the large scale, with the exception of the process arranged by Mr. Thomas Routledge, of Eynsham Mills, in Oxfordshire, who has been making printing paper from Esparto for the last nine years, and has taken out three patents for the processes employed. He has lately taken a mill at Ford, near Sunderland, for making printing paper from Esparto only. Other manufacturers have, however, used it mainly as a blend with rag material.

No material alteration in the machinery or apparatus is required for working Esparto, and very much less power is required. The successful working of this fibre depends mainly on the careful and proper adjustment of the quantity and strength of the chemicals employed.

The quantity of soda ash required for neutralising the gummo-resinous matters contained in the fibre, so as to admit of its being made into a pulp, is very large, though not so great as is required for straw; and the fibre, unlike rags, never having before been subjected to bleaching or other chemical treatment, also requires very much more bleach powder to bring it to a colour suitable for printing paper. The quantities required are from five to six times as much as for cleansing and bleaching the coarsest rags.

The importations of Esparto into the United Kingdom for the past 12 months being about 18,000 tons, the use of this article may be estimated to have caused an increased consumption of soda ash and bleach powder of at least 4,000 tons per annum, and the fact of these chemicals being dear on the Continent of Europe, is one obstacle to the use of Esparto there.

Nearly all news paper, not excepting that on which the *Times* is printed, contains a portion of Esparto, and some of the penny daily papers published in Edinburgh contain only one-fourth rag material.

The large supply of paper making material from this source has been most opportune. Rags are becoming gradually scarcer; coloured rags suitable for making common printing paper were worth 4s. to 6s. per cwt. in 1848, and are now worth 9s. to 12s. per cwt., and this notwithstanding the relief produced by the importation of Esparto.

This scarcity, the existence of which the Jurors' Report of the Exhibition, 1862, most unaccountably denies, has been aggravated by the almost total cessation of the supply of waste and tares from the cotton mills, and even with the assistance of Esparto grass and cheaper chemicals and fuel, the paper makers in this country have been placed in a most disadvantageous position in respect of the supply of material in comparison with their continental rivals, by recent legislation, which in the opinion of many will have a tendency to cripple the progress of the trade in this country. The discussion of this subject is, however, not suited for the present occasion.

The greater part of the paper manufactured in this district is of the coarser descriptions, and Newcastle brown and Tyne casing, which, from a geographical error, is known in Manchester as Scotch paper, have a reputation throughout the kingdom for toughness and general excellence.

The printing and writing papers of Messrs. Annandale and Sons have a deservedly high reputation in the London market. The other descriptions of white paper made in the district are mainly for the daily newspapers, whose consumption of common printing paper has of late years become so enormous as materially to alleviate the depression consequent on the general dullness of trade arising from the cotton famine, and it is hoped, notwithstanding the unfairness with which the trade has been treated by the legislature, that, with the resumption of business in Lancashire, it may recover its former prosperity.

On Improvements in Machinery and Apparatus for Cleansing and Purifying Casks. By Robert Davison, C.E.

In the paper which the author had the honour of reading before this Association in the year 1849, on the "Desiccating Process," he took occasion to mention its application, amongst others, to the purifying of brewers' casks, and further stated that upwards of one million casks had at that time undergone the process. It was not, however, made clear that the casks had to undergo a previous operation, namely, that of cleansing, which was effected by machines of peculiar construction, completely removing all adhering matter from the inside without resorting to the expensive and injurious system of unheading.

The object of the present paper is not only to confirm all that was then stated as to the efficiency of the hot air system by stating that upwards of eleven millions of casks have since been treated in like manner, but to illustrate still further the importance of a proper system of cleansing casks before any purifying process is applied.

It may seem at first sight but an indifferent matter to bring before an important Association like the present, but when it is considered that there are no fewer than 2,400 public breweries in the United Kingdom who brew something like 20,000,000 barrels of beer annually, and assuming that at least an equal number of casks require to be cleansed, it becomes a matter of considerable importance how, and at what cost, this enormous amount of work is accomplished.

As regards the cleansing process, it is worthy of note that the first successful introduction of machinery for this purpose was in the year 1843, when the author, in concert with Mr. W. Lymington, produced the machine already referred to, as well as the improved mode of purifying.

Previous to this period, the only known method of cleansing was by the introduction of steam or hot water, or both, assisted by a chain placed inside, and a rolling motion given to the cask by hand. By such means it will not be difficult to see how uncertain would be the internal state of the cask.

The machine invented in 1843 consisted of a double frame, suited to the form and size of each cask, the frames revolving one within the other, and at right angles to each other in such a manner as to cause a chain of peculiar construction, assisted by hot water, to traverse completely over every portion of the cask, and so effectually remove all adhering matter. These machines still continue to be held in high repute at many first-rate establishments, and so far as cleansing is concerned, they are nearly, if not quite, equal to anything which has since been attempted in this way. There is, however, one objection to them, namely, they are only calculated to cleanse one cask at a time, which, in such establishments as the two leading Burton houses (whose demand for casks each day amount to thousands), has been a complete bar to their introduction and use. The new machine now placed before the Association not only gets over the difficulty in respect to the number of casks cleansed at one time, but is superior to the old machine in point of speed generally. This machine consists mainly of two circular discs with an upright shaft or spindle in the centre, which has a screw at each end (the threads being cut right and left handed). The two discs have likewise each a corresponding female screw, which, when turned round on the upright spindle (the same being temporarily fixed), it will be easy to see, will cause the discs to advance or recede from each other, according as they are turned to the right or left hand. Such is the mode by which the casks are either secured or released from the machine, that is, by turning in one direction, the casks are effectually secured between the two discs; by turning the reverse way they are released.

Any number of casks which the bottom disc will contain, and even a second tier (if desired) can be fixed and afterwards cleansed at one operation—say two sets of 5 or 10 casks.

A compound motion is given to this machine not dissimilar (so far as the outer action is concerned) to the old machine, but, from the fact of the cask being placed in an upright position in the machine, and likewise surrounding the middle shaft or spindle, the casks themselves, when the machine is set in motion, are twirled about in a manner altogether peculiar and effective.

The best cleansing medium is found to be a small quantity of sharp shingle along with two or three gallons of hot water.

The time occupied in cleansing ordinary dirty casks is about 5 minutes, and very bad mouldy casks about 12 minutes. Thus it will be seen, that one of these machines is calculated to cleanse easily 100 ordinary dirty casks, or 60 mouldy ones per hour, at the mere expense of two or three labourers and an insignificant amount of engine power. In large establishments where unheading is still resorted to, the saving to be effected by this new machine must of necessity be great.

With regard to purifying both new and old casks, there can be no doubt that the wisest course for new casks is to divest the wood as much as possible of the coloured juices before it is made up into casks, which is easily done by hot water or steam, and it is afterwards dried by currents of hot air.

Old and tainted casks are found to be cured (within 1 in 200) by partial steaming, and afterwards by exposure to currents of hot air at 450 degrees Fahr.

Experience having sufficiently proved the soundness of this mode of preparing casks for a most important branch of trade, it may seem almost needless to suggest any other method of performing the same work, but the author being the first to discover the importance of applying heated currents to such a purpose, he feels it incumbent on him to state that there is still another element which he is not sure but must ere long supersede to a considerable extent the one before referred to. It is that of of superheated steam, the use of which was discovered lately by the author in rather a singular manner, namely, while engaged in some experiments with superheated steam, it occurred to him, seeing that there was an indicated temperature at the time of between 600 and 700 Fahr., that it would be well to try its effect upon a very bad stinking cask, which, being obtained, was subjected to the heat only ten minutes, when it was pronounced perfectly sweet. It is only necessary to add that the same result has attended many repetitions of the system, and although they have not all been attended with the same successful results, the author feels that it has not arisen from any fault in the principle, but from a want of sufficient practical data as to the exact temperature and also the amount of time which the casks can be safely exposed to this powerful agent.

ON THE DECORTICATION OF CEREALS. BY CHARLES DAVISON, C.E.

What is understood by the decortication of grain? It is a system by which the exterior envelope is taken off, so that there remains only the kernel of flour; in other words, decortication does to the grain what most persons do to fine fruit before eating, namely, they peel it, in order that the bitterness or coarseness of the skin may not diminish the flavour and goodness of that which is within.

Thus, decorticated grain is without the bitterness which the skin communicates, whether it be for making bread or for distillation; in fact, any one who has not tasted bread made from decorticated corn does not know the natural taste of wheat flour.

Corn is the most valuable of the farinaceous food of man, and it is important to know if the flour of old corn can be improved by decortication. Look, then, to the structure of a grain of corn, beginning from the outside. We find a gummy and resinous pellicule in order to protect the grain, at the same time not stopping the power of absorption, and it is easy to understand that this pellicule easily gets discoloured and charged with dust that must impart a bad taste; after this pellicule there is a thinner skin distilling the air and nourishing the kernel as through a thin veil. There is a third envelope, formed of impalpable dust, which acts as a sponge, absorbing the damp and stopping putrefaction, and giving a longer life to the kernel. These three envelopes form the brans, and are called in science, *Epiderme*, *Epicarpe*, and *Ludicarpe*. Under these three there is a thin skin, called in science, in France, "*Testa*." This skin sticks to the floury kernel, and surrounds it like a cuirass, and the object of the decorticator is to take off this cuirass, and strip it completely without injuring it.

After the *testa* we come to the germ of the grain, which surrounds the kernel like a crown, enlarging it towards the embryo. This is the flour "par excellence." Then come the particles the most glutinous, then the centre.

One can understand that in completely taking off the three brans of old wheat, or of Egyptian wheat, before grinding, the flour will necessarily be better. If the three brans be preserved separately, the inner one will be found in the form of a fine, black, bitter, bad-smelling dust.

What advantages, then, are to be obtained by Decortication?—The answer is 10 per cent. increase in quantity of flour (at least, upon wheat), and from 12 to 15 per cent. in barley and oats, and at the same time a finer colour and a better taste. The next question which arises is, "Ought the grinding of decorticated grain to be done in the same manner as undecorticated grain?" The answer is, "No." Having shown that the finest flour for taste and nourishment adheres to the skin, the grain must be pulverised to detach this flour from its envelope. You must then grind as fine as possible, so as not to heat the flour, then dress through a dressing-machine, of which the coarsest silk will not let through more than the third or fourth degree of fineness—thus you will obtain 80 per cent. of the weight of corn; then you will either regrind or redress the remainder, so as to have 90 parts of flour from 100 parts of the corn decorticated. The 90 parts of flour will make a delicious and nourishing bread.

As to Decortication in a hygienic point of view, the flour of decorticated corn at 90 per cent. is more nutritious than ordinarily ground corn at 78 or 80. All the chemists (in France) who have analysed and compared flour from decorticated and undecorticated corn find 5 and 6 per cent. more gluten in the former than in the latter. The formation of the grain shows us that it must be so. In grinding undecorticated grain, to prevent the third bran from spoiling the colour of the flour, the stones are put so far apart that a large portion of the flour is suffered to escape in the brans, and we have seen that the exterior flour is richest in gluten and in phosphoric principles.

As in the ordinary millering, the greater part of this excellent flour is left in the bran, so flour from undecorticated corn, extracting 78 to 80 per cent. of the weight of the corn, is inferior in nourishment and in flavour to the flour of decorticated corn extracting 90 per cent. of the natural weight of the corn.

As regards the several qualities of bread, the decortication does not affect the different qualities that exist in the flour; the compartments of the dressing machine divide it, and one can always have bread more or less white according as the 1st, 2nd, or 3rd flours are more or less mixed. The quality of the 1st will be incomparable—but what is gained in whiteness is lost in taste and nourishment. Thus we say, the first flour will only be used for pastry and for very fine bread—it will be excluded from the table where bread is the principal food—and will be only used at the table of the luxurious.

It is better to make a quality with all flours united, making a wholesome and well-flavoured bread, and experience has proved that young people, more especially, fed with this bread will have a strong and vigorous constitution instead of the lymphatic blood produced by the white and tasteless bread in common use.

In order to obtain this complete decortication, the principle adopted by M. Poissant (the pioneer of this system) is that of causing a continuous rubbing of grain against grain by means of a well-devised machine—the result of many years' toil—but which it is hardly possible to describe here. Suffice it to say that it consists of two sets of revolving blades, driven at 300 or 400 revolutions per minute, which causes the grains to come into contact with each other in such a manner as to create a speedy expansion and separation of the skin, and as each skin is loosened, so is it driven off at stated and fixed periods by an arrangement of fanning.

It is necessary to observe that the grain, previous to decorticating, is immersed for a second or two in cold water, and allowed to drain for four or five minutes before it is put into the hopper of the machine. The next step before grinding is to take care that the grain is thoroughly dried, which is easily accomplished by rapid currents of heated air meeting the grain as it passes from the machine, it being observed that the moisture, through its immersion, is exceedingly slight, and altogether superficial.

It is a matter of singular yet great importance to know that corn and other cereals decorticated are not likely to be attacked by that destructive insect the weevil, that is, if the decorticated corn is carefully excluded from sunshine. Thus, to preserve decorticated corn, after it is properly dried, it should be put into barrels, or stored in close and air-tight granaries, where it will be found to keep for an indefinite period.

By way of recapitulation it may be stated,

1st. That decorticated grain will always be profitable to the world, as it incontestibly yields 10 to 12 per cent. more flour than ordinary millering.

2nd. It can be done in either small or large quantities, and not only produces from 10 to 12 per cent. more flour, but at the same time from 5 to 6 per cent. more glutinous nourishment.

3rd. Its non-susceptibility of attack from the weevil, and therefore its fitness for storing against periodical seasons of scarcity.

Lastly. The machines are simple, cheap, lasting, and capable of being worked either by hand or motive power at small cost, and have, in fact, no known drawbacks, except that pollard bran, &c., which is produced by the present method of millering, will no longer be an article of commerce. But as a set-off, the pellicule which is produced by the new system is found to make an excellent vellum-like paper, which is largely sought after in France by bookbinders.

The above is based partly on personal observation and examination, and partly from written communications from M. Poissant, whose whole life nearly has been devoted to this subject.

POSTAL AND TELEGRAPHIC COMMUNICATION IN FRANCE.

The *Annales Télégraphiques* states that the number of letters passing through the French post-office in 1862 was 300 millions, of which 1,820,000 were registered, and 976,047 were letters containing property of a declared value of 600 millions of francs. The number of newspapers, pamphlets, patterns, and small parcels, &c., was 190 millions.

The gross receipts of the post-office authorities were, in 1861, 66,781,363 francs; expenses, 42,748,373 francs, leaving a balance of 24,032,990 francs.

The accounts for 1862 are not completed, but the receipts amount to 69,906,000 francs.

The number of private telegraphic messages transmitted in 1862, by the telegraphs under Government management, was 1,521,000; the receipts were 5,315,000 francs.

To these must be added the private messages transmitted by railway companies, which amounted in the year to 80,000, producing a sum of 135,000 francs, so that the total number of private messages transmitted reaches 1,601,000, producing no less than 5,451,000 francs. The number of Government messages exceeded 500,000, representing an amount of more than two millions of francs.

It appears, then, that the more the tariff of postal and telegraphic communications has been lowered, the larger has been the total sum realised. The telegraph, so far from diminishing the number of letters, seems to have tended to increase it. The hours when the telegraph is principally in operation are from twelve to three, while the exchange is open, and when business is at its height.

IMPROVEMENT IN THE PREPARATION OF ESPARTO PULP.

Mr. Joseph Carbonnell, of Paris, gives the following description of an improved method of preparing and washing the paper pulp derived from Esparto:—

I take, say 200 lbs. weight of the esparto plant, or spartium in stalk, in the raw state, and place it in a wooden vat or trough, mixing with it 20 lbs. of alkali or salt of soda, and 30 lbs. of quicklime, and immediately filling the vat with cold water until the esparto is completely covered. This operation ended, I boil the esparto for four hours by means of steam conducted through copper tubes, winding in a serpentine manner through the vat. These tubes or pipes are pierced with small holes in their entire length, and do not extend beyond the middle of the vat, so that the steam is gradually distributed, issuing at the same time from the small holes and the orifices of the pipes. The second operation ended, the esparto is in a soft state, and I then drain off the liquid by a cock at the bottom of the vat. I then carry the esparto to a hydraulic press, and after pressing out the dirty matter and the liquid it contains, I place it, mixed with 50 per cent. of clear cold water, in a cylinder similar to those used in paper-making, for triturating the rags. After fifteen minutes of trituration in this cylinder, the esparto becomes reduced to a fibrous matter, and I then throw in 24 lbs. of chloride of lime, thoroughly dissolved in clear water, and turn the cylinder until the chloride is well filled with esparto. I prepare in a small wooden trough, lined with lead, 1¼ lb. of sulphuric acid (marking 66 per cent.) with 3 lbs. of clear cold water. I pour this liquid by degrees upon the pulp, which immediately assumes a reddish colour; but at the expiration of forty-five minutes it becomes and remains perfectly white. There remains but to warehouse the pulp for 24 hours, and it is fit for paper-making.

STATISTICS OF WRECKS.

The following is a synopsis of the returns made by the Board of Trade to Parliament of the wrecks and casualties which have taken place on the coasts and in the seas of the British Isles during the past year. The materials from which these valuable documents are compiled are derived from reports furnished by the officers of coast guard, and receivers of wreck, resident on the shores of the United Kingdom.

When it is remembered that the number of vessels which entered inwards and cleared outwards from different British ports in the course of the past year was 268,462, and that these ships had on board probably 1,610,000 men, it becomes almost a matter of certainty that a large number of casualties should take place amongst them every year.

The coasts of the British isles extend upwards of 5,000 miles, and on looking at the wreck charts which accompany the register, it is observed that there are few parts of that continuous shore which are not studded with the usual wreck marks; and thus it is that on nearly every page of the register this fact constantly presents itself—that during the year no less than 1,827 wrecks and casualties took place on our coasts, with the loss of 690 lives.

Compared with previous years the register states that the wreck experience of the past year is very unfavourable. But the number of lives lost is fortunately considerably under the average, owing chiefly to the valuable and prompt services of life-boats and other means employed on occasions of wrecks on our coast. The wrecks and casualties in the year show a large increase on the average of those during the preceding eleven years. The number of wrecks in the last eleven years was 13,657, while the total voyages made to and from British ports in that period were 2,745,910, so that one ship was wrecked out of every 201. During the past year, as previously stated, the number of voyages of vessels to and from ports in the United Kingdom was 268,462, and out of this large number 1,827 casualties occurred, or one in every 147.

In the past eleven years, from the above wrecks, 8,775 persons were lost, or nearly 800 each year. Last year it appears from the returns that the lives of 4,729 persons were imperilled on the coasts of the British isles, of which number 690, or 14·59 per cent. were lost. The wrecks and disasters for the year 1862 may be thus classed:—

	Vessels.
Totally wrecked	455
Seriously damaged	695
Totally lost in collision	66
Damaged seriously by collision	272
Injured by collision	339
Total	1,827

This number of disasters for last year is at the rate of five per day.

The months of January, February, March, October, November, and December were the most destructive to ships.

The publication of the Annual Register of the Board of Trade, and other means of publicity, have materially contributed to the establishment on our coasts of a system of life-boats and life-preserving apparatus, which reflects the greatest credit on the philanthropy of the age in which we live, and on the energy with which these means have been placed on our shores, by the joint action of the National Life-boat Institution and the Board of Trade.

By means of life-boats, the life-preserving apparatus, ships' own boats, and other means, 20,158 lives have been saved during the past seven years, of which 4,039 were rescued last year.

The following is a summary of the means used in saving the 4,039 lives from wrecks on the coasts of the United Kingdom during the past year:—

By life-boats and rocket and mortar apparatus	637
By ships, ships' own boats, shore boats, steamers, &c.	3,389
By individual exertion	13
Total	4,039

As usual, ships, ships' boats, and smacks have saved more lives in that period than the life-boats and the rocket and mortar apparatus. This apparent discrepancy is susceptible of easy explanation. When a disaster takes place in British waters, it frequently happens that either a ship or smack is fortunately at hand to render assistance to the crews of the distressed vessels. Such help is seldom attended with any very great danger (although sometimes it is so), and the men are often brought ashore before any tidings at all have reached a life-boat station. But the great value of the services rendered by life-boats can only be appreciated by considering that they are mostly performed on occasions when no other craft could be launched from the shore with safety.

Schooners and brigs were, as usual, the most numerous description of vessels that were lost during the past year on our shores. These are usually employed in our coasting and coal trade, and the destruction of hundreds of them even in moderate gales is now reduced to a matter of certainty.

In December last seven vessels foundered off the east coast of England, with the loss of all hands, while engaged in coasting voyages. One of them was a collier sloop 71 years of age. Another collier brig also foundered in October last, and seven out of nine of her crew were drowned. She was 99 years old.

The following is an analysis of the tonnage of the ships lost last year:—

	Vessels.
Vessels under 50 tons	341
51 and under 100 ,,	441
101 ,, 300 ,,	784
301 ,, 600 ,,	186
601 ,, 900 ,,	44
901 ,, 1,200 ,,	20
1,201 and upwards ,,	11
Total	1,827

The most destructive gales of wind were those that blew from S.W., S.S.W., W.S.W., and N.W.

The ages of some of the vessels that were destroyed were as follows:—

Under 3 years	122
3 and not exceeding 7 years	271
8 ,, ,, 10 ,,	131
11 ,, ,, 14 ,,	155
15 ,, ,, 20 ,,	216
21 ,, ,, 30 ,,	266
31 ,, ,, 40 ,,	125
41 ,, ,, 50 ,,	59
51 ,, ,, 60 ,,	25
61 ,, ,, 90 ,,	14
91 ,, ,, 100 ,,	1
Unknown	442
Total	1,827

In perfectly calm weather 23 vessels were wrecked; in light airs, 28; in light breezes, 56; in gentle breezes, 43; in moderate breezes, 110; in fresh breezes, 187; in strong breezes, 195; in moderate gales, 75; in fresh gales, 170; in strong gales, 199; in whole gales, 218; in storms, 63; in hurricanes, 69; and in unknown and variable weather, 52.

321 vessels were wrecked that were under the command of masters holding certificates of competency; while 720 were wrecked that were commanded by others who were not required by law to hold such certificates, and 266 that were commanded by foreigners not having British certificates.

Of the total wrecks during the past year on our shores, irrespective of collisions, 60 vessels foundered; 41 vessels were driven or run on a lee shore; 66 parted their cables, or dragged their anchors and went on shore; 40 were wrecked from damage to hull, or the loss of masts, yard, or sails; 3 were actually capsized; 72 were wrecked from inattention, carelessness, or neglect; 25 from defects in ships or equipments; 7 from a combination of causes, while 18 arose from accident.

Of the total wrecks that took place from collisions, 18 were from bad look-out; 22 because the rule of road at sea was not observed; 1 from the want of sea-room, 4 in thick and foggy weather, and 4 from neglecting to show lights; but it is worth observing that only 1 collision with total loss occurred from the error of the pilot who was on board; 4 occurred from negligence and want of caution.

It is a lamentable fact, in regard to collisions, that 141 took place in fine and clear weather, the whole number of collisions during the year being 338—102 in the day time and 236 in the night. Last year 11 collisions occurred between steamers, and 190 between sailing-vessels, while both were under way. 32 collisions also took place between sailing vessels, one being at anchor and the other under way at the time; but no collisions occurred between steamers under these circumstances. 46 collisions likewise took place between steamers and sailing vessels, both being under way; and 6 only when sailing-vessels at anchor were run into by steamers. 53 collisions also occurred by vessels breaking from their anchors or moorings. It is hoped that the admirable regulations which the Board of Trade have just published to prevent collisions at sea will materially tend to lessen the number of these fearful disasters.

The most disastrous wrecks, with the greatest loss of life, occur between that part of the coast extending from Skerries and Lambay to Fair Head and Mull of Kantyre. During the past thirteen years 1641 lives were lost in that district. The next is from the North Foreland to St. Katherine's Point, which during the same period claims 1,136 lives.

The estimated loss of property involved in the destruction of a portion only of the vessels wrecked in the last six years amounted to four and a half millions of pounds sterling, although the total amount, being unreported, cannot be ascertained.

In these six years the number of lives rescued by life-boats and the life-saving apparatus alone was 4,169. It may be proper to observe that these means of saving life are rarely used except under the most perilous circumstances.

The National Life-boat Institution has now 125 life-boats under its management. During the past year, in addition to saving twenty-one vessels from destruction, 358 lives were rescued by the life-boats of the Society. For these services rewards amounting to £915 18s. 1d. were voted. The number of lives saved by the life-boats of the Society, or by special exertions, for which it has granted rewards since its formation, is 13,220. For these services 82 gold medals, 733 silver medals, and £17,200 in cash have been granted as rewards. The Institution has also expended £75,380 on life-boats, life-boat transporting carriages, and boat-houses.

Proceedings of Institutions.

Ebbw Vale Literary and Scientific Institution.—The last report says that a retrospect of the proceedings of the past year, and a view of the present state and future prospects of the Institution, tend to produce a much more hopeful feeling than was entertained on the last occasion. The rooms have been remarkably well attended, and the number of subscribers, whose names have been entered upon the books has risen to 314 (exclusive of honorary members). 1st quarter, July to October, 210; 2nd quarter, to December, 229; 3rd quarter, to April, 224; 4th quarter, to July, 230. But the augury for the future good of the Institution is to be derived, not so much from the increase in the number of subscribers as from certain indications that the minds of the inhabitants of the valley are becoming gradually more alive to the fact that great privileges are within their reach, and that seldom or ever (at so low a cost) have such advantages been offered for improving themselves by education and mental culture, and thus elevating their position. During the past year an elementary instruction class, numbering 40 members, has been formed; this class, for the greater convenience of working, has been subdivided under the different heads of mechanical drawing, grammar, reading, writing, and dictation, and arithmetic, and these meet respectively on Monday, Tuesday, Wednesday, and Thursday evenings. These have been kindly presided over by Messrs. Thomas Morgan, W. J. Gwyther, Thomas Henry, and Charles Newman, to whom the committee are much indebted for their services. It is true, that in consequence of the inconveniently small size of the class room, the meetings of all but the mechanical drawing class have for a time been suspended; but a room more convenient, larger, and well adapted for the purpose is in course of completion, and it is confidently hoped that in a short time the whole of the class will resume its sittings. Since September, 1861, there has been formed a Welsh Grammar Class, meeting on every Friday evening; the number of members in this class is 16, and the average nightly attendance 13. In this class the members exercise themselves in reading, translating the best specimens of English prose composition into Welsh, in delivering short essays in that language, and in discussions. Small prizes also have been competed for amongst the members, and altogether the meetings have been very successfully conducted. In order to encourage in some measure these praiseworthy efforts at self-culture, a few of the members of the committee, assisted by some friends of the Institution, have established on a small scale a local prize scheme, offering prizes for the best Welsh and English compositions on various subjects; at present it may be regarded merely as an experiment; the subject for this year in both English and Welsh is, "The advantages to be derived by working men from Literary and Scientific Institutions." Prizes of equal amount will be awarded to the successful essays in both languages; first prize, £2 10s., second prize, £1. The adjudicators are the Rev. C. F. C. Pigott, M.A., of Llanwenarth, and the Rev. Wm. Roberts, of Blaenau. Six English, and three Welsh compositions have been sent in. The report of the adjudicators has not yet been received by the committee. The committee hope that at no very distant period some of the members will avail themselves of the assistance and advantages which this Institution possesses by being connected with the Society of Arts, and become competitors for the prizes annually offered by that body. On the unexpected retirement of Mr. Small, who had most efficiently filled the office of honorary librarian for four years, the committee secured the services of Mr. Charles Newman, who reports favourably with regard to this department. The issue of books for this year has exceeded that of the last by 504, being the difference between 2,646 and 3,150. The subjoined is an approach towards a classification:—

	English.	Welsh.		English.	Welsh.
History.............	121 ...	37	Tales & Novels...	1,179 ...	11
Biography	149 ...	10	Gen. Literature .	731 ...	100
Voyages & Travels	165 ...	13	Religious Literature...............	124 ...	109
Art, Science, and Philosophy......	195 ...	24	Poetry...............	103 ...	79

The library now numbers 1,427 volumes, of which 45 have been added this year. Some presents of books, together with gratuitous additions made to the museum, appear to evince an increased interest in the Institution, which is very gratifying; during the last year upwards of 60 ancient and modern, foreign and English coins have been presented; eight specimens illustrative of Natural History; 20 geological and mineralogical specimens; together with many curious and interesting objects. The reading room has been exceedingly well frequented. The annual soirée was most satisfactory; it attracted the attendance of about 600 members and friends. The expenses were considerably lessened by the valuable services of several lady and gentleman amateurs, who sang a variety of glees and madrigals; by the gratuitous services of the Ebbw Vale Rifle Volunteer Band, and by the kind assistance of the lady members and friends who presided over the refreshment tables. To these circumstances may be attributed the balance of £8 1s. 11d. in favour of the Lecture and Entertainment Committee. In addition, two entertainments have been given this year, one entitled "Shadows on the Wall," by Mr. Basil Young; and the other (Musical) by Mr. Owen, of Chester, and others. By these the sum of £3 8s. 8d. was realised. A lecture on "The Philosophy of True Manliness," was given by Mr. Vincent. The income has been £80 4s. 1d., and there is a balance in hand of £11 10s. 10d. In addition to the above balance, the old debt due to the treasurer at the close of last year has been liquidated.

HASTINGS MECHANICS' INSTITUTION.—The last report says that the following lectures have been delivered during the past session:—Mr. T. Warr, "The Tonic Sol-Fa Method of Singing;" B. W. Hawkins, Esq., "The Age of Dragons;" Rev. T. Harding, "The Earth as a Planet;" Discussion, "Is the Reading of the Works of Fiction to be approved, and to what extent?" Dr. Moore, "The Will as a Force;" J. G. Fitch, Esq., "Dr. Arnold;" W. D. Lucas-Shadwell, Esq., "Mighty Ends from Small Beginnings;" J. C. Savery, Esq., "On Food;" Mr. Butler, "Philosophy of a Candle;" S. Sharpe, Esq., "Temple of Jerusalem;" G. Butler, Esq., "Literary Reading;" Dr. Hunt, "Lectures and Lecturing;" G. Dawson, Esq., "Ill-Used Men;" W. Stokes, Esq., "On Memory;" J. Q. Rumball, Esq., "On the Gorilla;" Mr. John Banks, "Smugglers and Smuggling;" G. Butler, Esq., "Literary Reading." The lectures, on the whole, have been well attended. The entire receipts from them were £15 3s., and the expenditure £19 12s.; so that the average cost of each lecture was 5s. 2¾d. This is an improvement over the last annual report, when the lectures cost 17s. 1d. each. The income for the year was £173 5s. 2d., and the expenditure £160 15s. 9d.; there being no outstanding accounts, the balance in hand of £12 9s. 5d. shows the exact financial position of the Institution. 91 volumes have been added to the library during the year, at a cost of £21 7s. 3d. During the same time 3,259 books have been in circulation. During the last quarter 22 have joined the Institution, and 19 have left; the present number is 336. During the whole year 125 have joined, and 97 have left. The classes have not been attended so well as the committee could wish, although a decided improvement has taken place in this part of the operations of the Society. Three classes are now in existence: the French, conducted by Mr. T. Edwards; Drawing, by Mr. S. C. Burgess; and Arithmetic, by Mr. F. W. Wormersley. Efforts will be made to continue these classes through the summer. A proposal to offer small prizes for efficiency in these departments of learning has been made, which, it is hoped, may do something to stimulate many of the young men to greater mental activity. It is in these regular methods of instruction, after all, that the most important means of doing permanent good are to be found. This fact the committee earnestly urge on the consideration of the younger members, that they may do something better than employ their time in desultory reading. The committee conclude by congratulating the members on the healthy life of the Institution, and by expressing a hope that the principles by which that life has been kept up may continue to be maintained. Many similar Institutions have come to an end during the lifetime of this, chiefly because they have been unfaithful to their mission. The committee earnestly invite the members to co-operate with them still in the great work of refining the taste and educating the minds of the middle and working classes.

PATENT LAW AMENDMENT ACT.

APPLICATIONS FOR PATENTS AND PROTECTION ALLOWED.

[*From Gazette, September 18th*, 1863.]

Dated 8th September, 1863.

2222. W. Clark, 53, Chancery-lane—Imp. in the means of utilizing refuse azoted matters of commerce for the manufacture of various chemical products. (A com.)
2224. G. T. Bousfield, Loughborough-park, Brixton—Imp. in rollers to be used in machinery for spinning and manufacturing wool, cotton, and other fibrous materials. (A com.)
2226. A. V. Newton, 66, Chancery-lane—An imp. in steam engines. (A com.)
2228. E. Oliver and G. Myers, Rotherham—Imp. in apparatus for lowering and disengaging boats from vessels.

[*From Gazette, September 25th*, 1863.]

Dated 11th June, 1863.

1449. W. Clark, 53, Chancery-lane—Imp. in obtaining and applying motive power, and in apparatus for the same. (A com.)

Dated 30th July, 1863.

1887. J. B. Howell, Sheffield—Imp. in ordnance, fire-arms, and projectiles.

Dated 17th August, 1863.

2041. R. Baillie, Glasgow—Imp. in reefing or furling the sails of vessels, and in the apparatus to be employed therein.

Dated 18th August, 1863.

2056. C. G. Wilson, Blackheath—Imp. in machinery for pressing cotton, and for crushing and pressing other substances, the said machinery being adaptable for locomotion on railways or on common roads.

Dated 27th August, 1863.

2119. C. Richard, 10, Rue de la Fidelité, Paris—A new or improved apparatus for lighting and cutting the ends of cigars.

Dated 31st August, 1863.

2145. G. Attock, Stratford, Essex—Imp. in assistant bearing springs for locomotive engines, railway carriages, waggons, and trucks.
2148. G. Bebbington and J. R. Hampson, Manchester—Certain imp. in means to be employed for securing the ends of bands in packing "bale goods," and in machinery for manufacturing "rivets" to be employed for the purpose, and also in apparatus for forming apertures in the aforesaid bands or hoops.

Dated 1st September, 1863.

2160. P. Joyot, jun., Paris—An improved fabric, and improvements in looms for manufacturing the same.
2161. J. H. Banks, Radnor-street, Hulme, Manchester—Imp. in the construction of benches or desks for schools, churches, and other similar purposes.

Dated 2nd September, 1863.

2167. R. Young, Glasgow—Imp. in separating and elevating apparatus for grain or granular matters.
2168. E. Collier, High-street, Leicester—Imp. in crinolines and crinoline fastenings.
2171. E. Alcan, King-street—A new method of and apparatus for feeding wool and other textile and filamentous substances into carding, combing, and other machines for treating such substances. (A com.)

Dated 3rd September, 1863.

2173. C. Jackson, Birmingham—Imp. in bolts for fastening doors, windows, shutters, and for other like purposes.
2175. A. A. Beaumont, 2, Rue Sainte Appoline, Paris—A new or improved engine for raising liquids.
2181. A. V. Newton, 66, Chancery-lane—Improved apparatus for cleaning and decorticating grain and seeds. (A com.)

Dated 5th September, 1863.

2187. W. Lorberg, 4, Wyld's-rents, Bermondsey—Imp. in the manufacture of gas and other substances from tan and similar materials.

2189. S. Mellbourn, Carshalton, Surrey—Imp. in the preparation of materials for the manufacture of paper, and in the construction of machinery employed for such purposes.
2191. T. Moody, Wincanton, Somersetshire, and E. T. Moody, Chelsea-villas, West Brompton—Imp. in the generation and production of motive power to be applied generally, and in its special application to the propulsion of vessels.
2192. J. Rowell, Aberdeen—Imp. in the manufacture and construction of fences, part of which are also applicable to the manufacture and construction of gate posts, and to poles and posts used for telegraph and signal purposes, and for stretching telegraph wires.
2193. T. Smith, Wolverhampton—An improved waggon break.
2195. C. H. Adames, Birmingham—Imp. in the manufacture of lids or covers for certain articles of hollow ware.

Dated 7th September, 1863.

2197. F. Mills, T. Booth, and T. Clegg, Heywood, Lancashire—Imp. in machinery for preparing and spinning cotton and other fibrous substances.
2199. N. Singleton, Manchester—Certain imp. in machinery or apparatus for cutting hay, straw, or other similar agricultural produce. (A com.)
2201. A. V. Newton, 66, Chancery-lane—Improved apparatus for directing motion in right lines. (A com.)

Dated 8th September, 1863.

2203. L. Mond, Appleton-in-Widness, Lancashire—Imp. in obtaining sulphur and sulphurous acid from alkali waste.
2205. J. C. Lott, Clyro (near Hay), Radnorshire—Improved apparatus for turning over the leaves of music.
2208. T. H. Baker and G. Friend, Tunbridge, Kent—Imp. in treating excrementitious and sewage matters, and in the means or apparatus employed therein.
2209. R. A. Brooman, 166, Fleet-street—Imp. in machines for working and preparing skins. (A com.)

Dated 9th September, 1863.

2213. W. H. Tucker, 6, Southampton-street, Strand—Imp. in the modes of propelling and steering vessels.
2217. W. Glydon, jun., Birmingham—Imp. in apparatus and machinery for the manufacture of metallic tubes and hollow cylinders, part of which imp. may also be applied to the casting of other hollow bodies.
2219. W. E. Gedge, 11, Wellington-street, Strand—Imp. in paving roads or ways. (A com.)
2221. J. Robinson, Batley, Yorkshire—Imp. in steam boiler and other furnaces.
2223. N. Thompson, 15, Abbey-gardens, St. John's-wood—Imp. in apparatus for stopping bottles, jars, and other vessels, which imp. are also applicable for stopping the muzzles of fire-arms.
2225. W. Hutchinson, Salford—Imp. in steam engines.
2227. J. Maggs, Bartlet-street, Bath, Somersetshire—An improved construction of fountain pen.

Dated 10th September, 1863.

2231. W. W. Greener, Birmingham—Imp. in breech-loading fire-arms.
2232. H. Wright and J. W. Wright, Freedom Mills, Morton, near Bingley, and W. Clough, Keighley, Yorkshire—Imp. in glazing and rolling press papers, pasteboard, and other paper requiring to be glazed or rolled, and in the means or apparatus employed therein.
2233. M. A. Muir and J. McIlwham, Glasgow—Imp. in machinery or apparatus for winding yarns or thread.
2234. W. Clark, 53, Chancery-lane—Imp. in the purification and disinfection of hydro-carburets, and especially of oils produced by the distillation of coal schist and boghead. (A com.)
2235. J. H. Whitehead, Royal George Mills, near Manchester—Imp. in the manufacture of felted fabrics.

Dated 11th September, 1863.

2236. J. Hartshorn and W. Redgate, Nottingham—Imp. in the manufacture of lace, and in means or apparatus employed therein.
2237. W. Taylor, Lawton Iron Works, Shiffnal, Shropshire—Imp. in the manufacture of iron rods, and in machinery to be employed in the said manufacture.
2238. L. Desens, 18, Rue de l'Echiquier, Paris—An improved bath or bathing machine adapted for deep water.
2239. T. J. Sloan, Paris—Certain imp. in braiding machines.
2240. J. Rhodes, Morley, near Leeds—An imp. in piecing machines.
2242. J. Dobbie, St. Petersburg, Russia—Imp. in the construction of railway and other carriages.
2243. J. D. Lee and J. Crabtree, Shipley, near Bradford—Imp. in looms for weaving.
2244. H. Chrichley, Birmingham—Imp. in stove grates and kitchen ranges.
2245. M. Gerstenhofer, Freiberg, Saxony—An improved construction of furnace for roasting pyrites.

Dated 12th September, 1863.

2246. J. Crellin, Lime street, Liverpool—Imp. in apparatus for governing and stopping the flow or passage of liquids.
2247. J. King, Glasgow—Improved means for assisting and regulating the process of fermentation.
2248. C. E. Wallis, Millman-street, Bedford-row, Holborn—Imp. in revolving fire-arms.
2249. E. N. Gregory, Camberwell, Surrey—An improved method of uniting belts and lengths of wire gauze and other metal cloth.
2250. W. Clark, 53, Chancery-lane—Imp. in revolving fire-arms. (A com.)
2251. D. S. Sutherland, 34, Great George-street, Westminster—Imp. in blasting rocks and other materials.
2252. J. A. Whipple, Boston, U.S.—Imp. in apparatus for supporting photograph cameras.

Dated 14th September, 1863.

2254. W. R. Hutton, Glasgow—An improved lubricating compound.
2255. T. Bell, Wishaw, N.B.—Imp. in apparatus for distilling shale or other bituminous minerals.
2257. G. F. Millin, Oxford—Improved arrangements for facilitating the quick detachment of horses or draught animals from carriages or vehicles, and for the application of break-power with the view to prevent accidents.
2258. G. W. Billings, New York, U.S.—An improved method of preparing the fibres of hemp, flax, and other vegetable materials, for manufacturing purposes.
2259. W. Gassage, Widnes, Lancashire—Imp. in drying or curing certain vegetable productions.

Dated 15th September, 1863.

2260. C. Battcock, Wandsworth—Imp. in cigar lighters and fusee matches, part of said imps. being applicable also to vestas and matches, wax tapers, and candles.
2261. G. Howell, Old Kent-road—Imp. in machinery for stamping or obliterating and printing, especially applicable to post-office purposes, parts of which imps. are applicable to machines in which cams are employed.
2262. W. Thompson, 5, Rue Neuve des Martyres, Paris—Imp. in electric telegraph apparatus.
2263. A. Barclay, Kilmarnock, Ayr, N.B.—Imp. in locomotives or other steam engines.

Dated 16th September, 1863.

2267. J. Cox, George Mills, Edinburgh—An imp. in swings.
2268. J. Rahill, Minories—Imp. in liquid compasses.
2269. A. Watson, King-street—An imp. in hinges.
2270. J. Daunatt, Sunderland—Imp. in the construction of apparatus for cooling liquids.

INVENTION WITH COMPLETE SPECIFICATION FILED.

2320. W. Elsdon, Sandridge, Bourke, Victoria—The construction of rail and road carriages and improved wheel tires, and an imp. in railway crossings, adapting them to such carriages.—21st September, 1863.

PATENTS SEALED.

[*From Gazette, September 25th*, 1863.]

25th September.

326. H. Dircks & J. H. Pepper.
803. R. A. Brooman.
813. W. Symons.
815. J. Dale and G. Bischof, jun.
819. H. Hughes.
820. J. Carver.
824. E. T. Hughes.
825. J. Smethurst.
826. A. B. D. Maurand.
830. R. A. Brooman.
835. J. Hindle, W. F. Calvert, and E. Thornton.
836. I. Rowland.
837. J. Bray.
840. W. West.
841. W. Mitchell.
845. W. H. Phillips.
846. J. W. Law and J. Inglis.
847. E. F. Clarke.
849. J. Cassell.
850. J. J. Potel.
853. A. P. Price.
854. A. B. Seithen.
856. J. Blain.
857. P. Hanrez.
897. A. Hett and F. W. Basset.
924. J. Ramsbottom.
936. W. Keats and J. Keats.
937. J. Combe & H. Smallpage.
938. J. Keats and W. S. Clark.
957. C. Terrett.
970. C. Turner.
971. B. J. Webber.
1006. G. B. Barber.
1067. J. H. Johnson.
1118. E. Chesshire.
1168. E. R. Clark.
1310. P. Leprovost.
1324. M. Henry.
1397. W. E. Newton.
1599. D. Hussey.
1670. J. Oxley.
1710. P. G. B. Westmacott.
1712. P. G. B. Westmacott.
1761. R. Hornsby jun., and J. E. Phillips.
1800. G. F. Wilson & G. Payne.
1878. N. Thompson.
1881. W. E. Newton.
1890. R. Hoe and H. J. Cole.
1900. R. Stewart.
2009. S. R. Wilmot.

PATENTS ON WHICH THE STAMP DUTY OF £50 HAS BEEN PAID.

[*From Gazette, September 29th*, 1863.]

21st September.

2316. J. H. Tuck.
2461. T. Barnett.

23rd September.

2322. J. H. Johnson.
2325. C. Kind.

24th September.

2335. W. Hargreaves.
2340. J. McCrossan.
2348. M. Jacoby and J. Stones.
2363. A. Warner.
2386. J. L. Norton.

25th September.

2333. F. W. Daehne.
2351. W. A. Martin & J. Purdie.

26th September.

2352. A. F. Sheppard.
2357. J. A. Callander.
2364. T. Robinson.

PATENTS ON WHICH THE STAMP DUTY OF £100 HAS BEEN PAID.

[*From Gazette, September 29th*, 1863.]

24th September.

2349. W. Marriott & D. Sugden.

25th September.

2265. D. Law and J. Inglis.
2267. F. Ransome.
2293. J. Dauglish.